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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/515,896	02/29/2000	Akio Yoneyama	000233	9736

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EXAMINER	
VO, TUNG T	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 03/12/2004 21

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/515,896	YONEYAMA ET AL.	
	Examiner	Art Unit	
	Tung T. Vo	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,5 and 7-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-3, 5, 7-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/26/04 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 2, 8, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujiwara et al. (US 6,052,417).

Re claim 2, Fujiwara discloses a video coding apparatus for coding a video picture by the use of motion compensatory prediction of each video pictures with respect to sequentially input video signals (fig. 7), the video apparatus comprising one-way coding (P) frame interval decision means (3, 4, 12 and 13 of fig. 1) for deciding a P frame interval (13 of fig. 7) for carrying out motion compensation prediction coding (5 of fig. 1) base on the motion features between timewise adjacent P frames (fig. 24, fig. 25 C, e.g. m=2, P1 and P3 are compared) with respect to the input video (INPUT IMAGE of fig. 7), the P interval inside on GOP (P1 and P3 are within GOP) being decided based on the decision by the P frame interval decision means (col. 10, lines7-13).

Re claim 8, Fujiwara further discloses the P frame interval decision means divides the input video picture into small blocks (18 of fig. 11) and carries out simple motion compensation prediction by the use of representative value per small block as so to decide the P frame interval (12 and 13 of fig. 7).

Re claim 12, Fujiwara further discloses the P frame interval decision means controls the make frame interval small into the case where a motion compensatory prediction error is large (col. 10, line 64-col. 11, lines 19) while controls to make the frame interval great in the case where the motion compensatory prediction error is small (col. 11, lines 33-60).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2, 3, 5, 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (US 6,151,360) in view of Fujiwara (US 6,052,417).

Re claim 2, 3, and 27, Kato teaches a video coding apparatus for coding a video picture by the use of motion compensation prediction of each of video pictures with respect to sequentially input video signals (fig. 3), where the video coding apparatus comprising:

inter-frame variance calculation means, the picture analysis circuit (60 of fig. 3) for calculating a variance between time-wise adjacent input video signals with respect to the input video signals/pictures (col. 4, lines 1-9); intra-frame coding mode decision means, intra-frame prediction mode (14, 14d of fig. 4) for deciding an intra-frame coding mode without using any motion compensatory prediction (23 of fig. 3) based on the variance; where the motion compensation is compensating the prediction picture data read out from the frame memory (22 of fig. 3) based upon the vector from the motion vector detection (11 of fig. 3), see also (col. 4, lines 39-48); and one-way coding (P) frame interval decision means, forward/backward/bi-direction mode prediction (14a, 14b, and 14c of fig. 3) for deciding a P frame interval (fig. 11) for carrying out motion compensatory prediction coding based on the features of the input video pictures, which are I pictures, B pictures, and P pictures (col. 6, lines 52-57).

Kato does not particularly teach a GOP boundary position being decided based on the decision by the intra-frame coding mode decision means, and means for deciding a P frame interval (13 of fig. 7) for carrying out motion compensation prediction coding (5 of fig. 1) base on the motion features between timewise adjacent P frames (fig. 24, fig. 25 C, e.g. m=2, P1 and P3 are compared) with respect to the input video (INPUT IMAGE of fig. 7), the P interval inside on GOP (P1 and P3 are within GOP) being decided based on the decision by the P frame interval decision means (col. 10, lines7-13)as claimed.

However, Fujiwara teaches a GOP boundary position being decided based on the decision by the intra-frame coding mode decision means (fig. 25A-25C), means for deciding a P frame interval (12 and 13 of fig. 7) for carrying out motion compensation prediction coding (5 of fig. 1) base on the motion features between timewise adjacent P frames (fig. 24, fig. 25 C, e.g. m=2, P1 and P3 are compared) with respect to the input video (INPUT IMAGE of fig. 7), the P interval inside on GOP (P1 and P3 are within GOP) being decided based on the decision by the P frame interval decision means (col. 10, lines7-13).

Therefore, taking the combined teachings of Kato and Fujiwara as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the P frame interval decision means (12 and 13 of fig. 7) into the encoding apparatus of Kato for the same purpose of deciding the interval of P frames of one GOP for encoding. Doing so would improve prediction efficiency.

Re claims 5, 7, 9, Kato further teaches wherein the intra-frame coding mode decision means (14d of fig. 3) selects an intra-frame coding mode (intra frame) when the inter-frame variance exceeds a predetermined threshold value (fig. 7), where value of γ is of a smaller value less than 1 (col. 8, lines 17-21); wherein the inter-frame variance is calculated by using at least

one of an absolute difference between the input video pictures and a pixel dispersion value of each of small blocks, into which the input video picture is divided (col. 16, lines 25-36); wherein the P frame interval decision means divides the input video picture into small blocks and carries out simple motion compensatory prediction by the use of a representative value per small block so as to decide the P frame interval (col. 16, lines 37-52).

Re claims 11 and 13, Kato further teaches wherein the representative value uses either one of an average inside the small block and a dispersion value inside the small block (figs. 18A-18C);

wherein the P frame interval decision means (32 of fig. 3) controls to make the frame interval small in the case (fig. 14 and 15) where a motion compensatory prediction error (23 of fig. 17) is large while controls to make the frame interval great in the case where the motion compensatory prediction error is small (col. 10, lines 3-19).

Re claims 8, 10, 12, see the analysis in claims 5, 7, 9, 11, and 13 above.

3. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al. (US 6,151,360) in view of Fujiwara (US 6,052,417) as applied to claim 2 and 3, and further in view of Igarashi et al. (US 6,324,216) B1.

Re claims 14, 15 and 16, Kato further teaches means for dividing a target video picture into small blocks (MPEG, Macro-Block is MB) (col. 13, lines 40-51), where the I, P, or B is divided into macro-block (fig. 18C), the macro-block is divided into small block that is divided into pixels as well 8x8 dots (fig. 18C); coding complexity prediction means (col. 11, lines 41-55) for predicting coding complexity in each coding system based on the feature of the video picture

inside the GOP so as to control a coding quantity at the time of coding in consideration of the complexity (col. 13, lines 52-65), where I-pictures and P-pictures are for checking pattern complexity and inter-frame correlation.

It is noted that the combination of Kato and Fujiwara fails to particularly teach judging an edge region inside the video picture based on the dispersion value of pixel information on the small block as specified in claims 14-15. However, Igarashi teaches judging an edge region inside the video picture based on the dispersion value of pixel information on the small block (figs. 2, 15A-15D, 20 and 32), where the comb deformation of edges in a picture is detected by the technique that is disclosed by Igarashi (fig. 32).

Taking the teachings of Kato, Fujiwara, and Igarashi as whole, it would have been obvious to one of ordinary skill in the art to modify the technique (fig. 32) of Igarashi into the combined encoding apparatus of Kato and Fujiwara for the same purpose of judging (detecting) edge region inside the video picture due to the dispersion value of pixel information on the small block, such as change of motion vector of the pixel. Doing so would allow the encoding apparatus to reduce temporal redundancy depending on which will result in the least amount of transformed data so that the apparatus encodes a picture which avoids stationary portions and moving portions with high efficiency as suggested by Igarashi (col. 3, lines 27-29, col. 6, lines 24-29).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nieweglowski et al. (US 6,272,178 B1) discloses a video data encoder and decoder.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung T. Vo whose telephone number is (703) 308-5874. The examiner can normally be reached on 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris. Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TUNG T VO
PATENT EXAMINER

Tung T. Vo
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